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Ice fishing tip-up display

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1 TITLE OF THE INVENTION

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3 Ice fishing tip-up display
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7 BACKGROUND OF THE INVENTION
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9 This invention relates generally to the field of ice fishing tip-up lights, and more
10 particularly to an apparatus for indicating an ice fishing tip-up strike with dual usage of
11 marking trails in low light conditions by a flashing light source and reflective body.
12

13 Since the time ice fishing tip-ups and like devices have been in use, there have
14 been numerous ways users have made a strike apparent after daylight hours. Common
15 indicators on tip-ups are flags, some equipped with lights. Flags that are used with
16 devices are not easily seen in the dark and therefore have been equipped with lights.
17 The lights that are used with these devices are constantly burning type that are usually
18 white/clear or red in color. The lights are turned to the on position in different ways,
19 though all in conjunction with a flag moving into a vertical upright position. U.S. Patents
20 Thiel 2,785,493, Whitacre 2,786,294, and Dumar 4,727,673 are examples of existing
21 devices that include a light to indicate a fish strike on tip-ups.

22 Theil's light uses a mechanical connection of the flag itself to complete a circuit to
23 light a bulb when the flag is in the upright position. Whitacre's light itself slides down the
24 flag staff into a socket to make the electrical connection to light a bulb. Dumar's light
25 uses a modified conventional flashlight to act as the light source. The flashlight is

1 mounted to the base of the tip-up and when the flag moves to the upright position, a
2 circuit blocking piece of material is removed thereby completing the circuit to light the
3 flashlight.

4 Common indicators in existence are not easily portable, if at all, from one type of
5 tip-up to another. They are not self-contained, weather-tight assemblies, and are often
6 mechanical. These mechanical connections can produce poor connections due to
7 elements of weather and corrosion.

8 ~~The constant burning type lights used can be confused with headlights and~~
9 ~~taillights of vehicles traveling on a frozen lake. A constant burning light draws 100% of~~
10 ~~it's power consumption at all times, so the power source life can be short lived. These~~
11 ~~indicators are also currently limited in color options so that ownership of a tip-up with a~~
12 ~~strike may be falsely identified in heavily fished areas such as tournaments.~~

13 ~~The lights that are specified by the patent examples listed are located on places~~
14 ~~of the tip-up other then the extreme end of the flag, limiting their visibility. The weight of~~
15 ~~these existing devices would be more than the strength of flag springs can raise to the~~
16 ~~upright position.~~

17 Tip-up lights by design have been single purpose devices, i.e., to indicate a fish
18 strike on a tip-up during poor visibility. When the flag is down, these lights are not
19 illuminated and location of the fishing apparatus is difficult to locate. The locations of
20 tip-ups on frozen lakes are at times marked with a snow pile, stick, or small tree branch
21 next to the device. These are not easily seen themselves and the fishing equipment is
22 left vulnerable to damage by motorized vehicles traveling on a frozen lake.

1 BRIEF SUMMARY OF THE INVENTION

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3 An object of the invention is to provide a flashing light source indicator.

4 A further object of the invention is to improve visibility of the light.

5 Yet another object of the invention is to consume less power, providing longer
6 battery life.

7 Yet another object of the invention is to provide a design that may be used on
8 multiple tip-up designs.

9 Still yet another object of the invention is to provide multicolor options so
10 fisherman can identify their fish strikes when fishing with friends or highly populated
11 fishing areas such as tournaments where multiple lighted tip-ups may be in use.

12 Another object of the invention is it may be used to mark trails at night either
13 powered by a flashing indicator, or un-powered by a reflective case.

14 In accordance with a preferred embodiment of the present invention, an ice
15 fishing tip-up display comprises a flashing light source located at one end of an
16 assembly; a tilt switch to determine whether a flag arm is in generally horizontal or
17 generally vertical position; a reflective enclosure of said tilt switch/flashing light source;
18 conductors to carry electrical properties from a power source to said flashing light
19 source; a power source and circuitry means to supply power to said flashing light
20 source; and an attaching apparatus to attach to a flag arm of a fishing device.

21 Other objects and advantages will become apparent from the following
22 descriptions, taken in connection with the accompanying drawings, wherein, by way of
23 illustration and example, an embodiment of the present invention is disclosed.

1
2 BRIEF DESCRIPTION OF THE SEVERAL DRAWINGS
3

4 The drawings constitute a part of this specification and include exemplary
5 embodiments to the invention, which may be embodied in various forms. It is to be
6 understood that in some instances various aspects of the invention may be shown
7 exaggerated or enlarged to facilitate an understanding of the invention.

8 Figure 1 is a perspective view of an ice fishing tip-up display in accordance with a
9 preferred embodiment of the present invention.

10 Figure 2 is a perspective view of Figure 1 displaying usage on an ice fishing tip-
11 up.

12 ~~Figure 3 is a perspective view of a cordless version of the invention.~~

13 ~~Figure 4 is an internal cutaway view of the power source section of the invention.~~

14 Figure 5 is an internal cutaway view of the light source section of the invention.
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1 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

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3 Detailed descriptions of the preferred embodiments are provided herein. It is to
4 be understood, however, that the present invention may be embodied in various forms.
5 Various aspects of the invention may be inverted, or changed in reference to specific
6 part shape and detail, part location, or part composition. Therefore, specific details
7 disclosed herein are not to be interpreted as limiting, but rather as a basis for the claims
8 and as a representative basis for teaching one skilled in the art to employ the present
9 invention in virtually any appropriately detailed system, structure or manner.

10 ~~With reference to the drawings, an ice fishing apparatus is shown generally in~~
11 Figure 2. The apparatus is of the tip-up variety such as disclosed in U.S. Patent No.
12 2,654,176 issued to Kachelski, et al., incorporated herein by reference, and will hereby
13 be the reference for the description of a tip-up apparatus. As the apparatus spans an
14 ice fishing hole, hook 35, sometimes baited, entices a fish to strike. Once the bait is
15 taken and line is spooled out from spool 36, assembly 34 will then spin releasing the
16 flag to the upright position. This chain of events is well known in the art. To accomplish
17 an important function of the invention, there is further shown in Figure 2 the present
18 invention utilized on the tip-up. Detachable power pack 31 is connected via conductors
19 to tilt switch / flashing light assembly 32. Removable fasteners 37 are used to attach
20 the conductors and flashing light assembly to the flag pole. After a fish strike and chain
21 of events as stated previously, the flag pole carrying the flag and flashing light assembly
22 will swing to upright position 33, activating the flashing light by means of a tilt switch.
23 The tilt switch is preferably of the mercury variety though may be gravity activated or
24 ~~mechanical wherein completes the electrical circuit to the flashing light source.~~
25

Ins. 05
1 ~~Figure 1 displays a preferred embodiment as utilized in Figure 2. Removable~~
2 power source 20 can be stored on ones person awaiting low light conditions to arm the
3 flashing light source. Power source 20 is connected to the flashing light source via cord
4 21, having a jack in which to connect the electrical property means to the flashing light
5 source. Cord 21 conductors are fed into weather tight tubular enclosure 23, and sealed
6 with rubber bushing 22. Enclosure 23 is surrounded with a high grade weather resistant
7 reflective membrane 24. Enclosure 23 acts as a weather tight enclosure to protect
8 further circuitry, tilt switch and flashing light 25, and all electrical connections thereof.
9 360 degree lens 26 covers the flashing light assembly providing a weather tight seal at
10 the extreme end of the apparatus. Lens 26, when present invention is mounted to a tip-
11 up, is located at the highest point to become a flashing beacon when flag pole is in
12 upright, vertical position (post fish strike).

Ins. 06
13 ~~It is another feature that the enclosure be reflective. The reflective material acts~~
14 as an indicator performing multiple functions. First, when the ice fishing tip-up is in
15 place spanning a hole with the flag down awaiting a fish strike, it is vulnerable to
16 motorized traffic on a frozen lake. The operators may see the fisherman though be
17 unaware of the locations of the fisherman's equipment. When shined upon by the
18 vehicles light source, the reflective enclosure will illuminate, indicating the location of the
19 equipment allowing the operator to steer clear. Another function is when the fisherman
20 awaits a fish strike on the tip-up, the fisherman may scan the area with a flashlight or
21 like device to verify the locations of the equipment. This is especially helpful during time
22 to pick up the equipment before exiting the fishing location. The enclosure is mounted
23 with it's length parallel to the flag pole, so that a fisherman may tell the flag position,
24 horizontal or flag down and vertical flag up, by use of a flashlight or like device simply by
25 shining the tip-up and determining the position of the reflective material. This is

1 especially helpful if the unit is unarmed without the power source or if electronic failure
2 occurs, so that the fisherman can still determine flag position.

3 It is further a feature that the light is of the flashing variety. A fisherman may
4 observe many lights on a frozen lake in darkness, whether lights from taillights, houses
5 or other fisherman. The flashing light provides a decisive indication of a fish strike on
6 the fishing apparatus. The flashing light source may be of assorted colors so fisherman
7 may use a specific color to help identify strikes on their equipment in heavily populated
8 areas. The assorted colors may be of self-flashing colored LEDs (light emitting diodes),
9 standard LEDs electrically pulsed to flash, multicolor LEDs, white LEDs, High
10 Brightness Blue LEDs, and alike.

11 To accomplish the means of sourcing electrical properties, in a preferred
12 embodiment, to the flashing light source, Figure 4 illustrates the detachable power unit
13 with a cutaway view of case 58. Battery cell 51 is inserted in socket 52 that allows for
14 battery replacement. Socket 52 is mounted to printed wiring board 56, including
15 circuitry to supply electrical properties via a connector socket 53, protruding to the
16 outside of case 58. Plug 54 may be connected and disconnected from this power
17 access portal to carry the electrical properties to the flashing light source. In the
18 embodiment shown in Figure 4, case 58 is a two piece shell variety wherein it may be
19 opened or closed for battery replacement and secured by screw 57. Screw 57 is
20 inserted in the center of the two case halves 55, drawing them tight.

21 ~~Figure 5 illustrates a cutaway view of tubular enclosure 65 of the flashing light~~
22 ~~source. In this embodiment, conductors surrounded by a protective coating 66, enter~~
23 ~~the enclosure where electrical connections 63 reside for the tilt switch 61 and flashing~~
24 ~~light 62. A view of lens 64 covers light 62.~~
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1 *Ins 28* ~~No the illustrated embodiment Figure 3, a cordless version of the invention is~~
2 shown. Tubular enclosure 42 is reflective and topped with lens 43. Pin type cell 41
3 supplies power to the unit. Cell 41 may be inserted into enclosure 42 in two directions.
4 Figure 3A exhibits a view of the pin type cell, positive pin 144 and negative pin 145. If
5 pin type cell 41 is inserted positive pole first, internal connections would result arming or
6 powering the device awaiting tilt activation. If the cell is inserted in the opposite
7 direction, partial view Figure 3B, the positive and negative poles of the cell will be
8 outside the unit disarming the apparatus, though sealing the hole and operating as a
9 holder for the cell.

10 In accordance with another aspect, the apparatus may be used to mark trails in
11 low light conditions. The invention is easily removable from a tip-up fishing apparatus.
12 Once removed the apparatus may be hung in branches of trees or secured there for
13 more permanent occupation. When mounted in the upright position and armed with the
14 power source, the apparatus will flash indicating a specific location in the dark. Multiple
15 units may be strung to create a marked pathway. This function is useful in many
16 situations, one example being marking trails of hunters tracking wounded game or
17 indicating the location of a downed animal. The invention possesses the reflective
18 weather tight enclosure so that if the power source is not connected, the apparatus can
19 be seen by an outside light source and shined upon to indicate a pathway or individual
20 location.

21 The invention is a multipurpose apparatus performing a minimum of two uses as
22 stated and limited only to the imagination of the user. The apparatus is small,
23 lightweight, and weather resistant. As a flashing tip-up light the invention indicates fish
24 strikes, position of tip-up flag, and protects the equipment it is attached to in low light
25 conditions. The flashing light source may be of multiple colors allowing for choice by

1 the user and flashes as an eye catching beacon. When removed the invention
2 functions as a trail indicator or identifier in darkness.

3 While the invention has been described in connection with a preferred
4 embodiment, it is not intended to limit the scope of the invention to the particular form
5 set forth, but on the contrary, it is intended to cover such alternatives, modifications, and
6 equivalents as may be included within the spirit and scope of the invention as defined
7 by the appended claims.